The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.4.15	
Subject	
Surface Finish, Metal Foil	
Date	Revision
3/76	**A**
Originating Task Group	
N/A	

1.0 Scope A test method for measuring the geometric irregularities (roughness, waviness, etc.) of the surface of metal foils.

2.0 Applicable Documents None

3.0 Test Specimen Any sample of metal foil to be tested. Care must be taken to insure that there are no wrinkles or kinks in the sample.

4.0 Apparatus

4.1 Amplimeter, with range selector for measuring surface roughness in micro inches.

4.2 Pilotor (electric) used to operate the tracer.

4.3 Tracer, for tracing and detecting surface irregularities.

4.4 Controlled Roughness Specimen

4.5 Surface Plate

5.0 Procedure

5.1 Test

5.1.1 Place the amplimeter on a rigid support such as a work bench, stand, or machine table with space beside it for the pilotor that will be used.

Note: Do not connect the amplimeter to a power line supplying heavy induction equipment such as induction furnaces, welders and induction motors. The starting and stopping of such equipment will cause fluctuations in the AC line voltage which may result in erroneous roughness readings.

5.1.2 Set the AA/RMS selector switch at AA (for arithmetical average), and turn on amplimeter.

5.1.3 Check setup for minimum vibration.

1. Position the tracer with an appropriate skidmount in place on the work surface. Do not try to use the tracer without a skidmount.
2. With the tracer stationary and the pilotor cable disconnected read the amplimeter digital display. If the reading is higher than the work allows, move the setup to a steadier support and repeat the check.
3. The displayed reading should not be greater than 10% of the roughness to be measured.

5.1.4 Set the roughness-width cutoff at 0.030 inch.

5.1.5 Set the ''Range'' selector switch.

5.1.6 Set the pilotor stroke length between 1 in. and 1.5 in.

5.1.7 To make sure that the equipment in paragraph 4.0 is operating properly, take a reading of the rated roughness specimen.

Note: The controlled roughness specimen must be thoroughly cleaned before it is used. A dirty specimen will give erroneous readings.

5.1.8 If erroneous display readings are obtained, check the following conditions:

1. Amplimeter is turned on.
2. Tracer is connected to the amplimeter with all connections tight.
3. Tracer is moving over the work.
4. Tracer point is in contact with the work.
5. Check the tracer cable for wear and for open or short circuits.
6. Check for a blown fuse in the amplimeter.

5.2 Evaluation Record roughness readings in micro inches using Arithmetical Average (AA). A minimum of 3 areas per sample should be taken for determining the surface roughness.